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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,089	12/11/2003	Janice H. Nickel	200308743-1	9147

22879 7590 11/17/2006

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EXAMINER

DICKEY, THOMAS L

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 11/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/733,089

Applicant(s)

NICKEL ET AL.

Examiner

Thomas L. Dickey

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 11, 12 and 14-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2003 and 13 April 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Art Unit: 2826

## **DETAILED ACTION**

1. The amendment filed on 9/7/06 has been entered.

### ***Response to Arguments***

2. Applicant's arguments filed 9/7/06 have been fully considered but they are not persuasive.

Applicant's arguments, see page 5 lines 4-14 of the paper filed 9/7/06, with respect to the rejection(s) of claim(s) 1-6,8,9, and 13 as anticipated by Nickel et al. 2005/0104146 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

Applicant's arguments, see page 7 of the paper filed 9/7/06, with respect to the rejection(s) of claim(s) 1-8,10, and 13 as anticipated by Daughton et al. 2005/0125673 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. It appears the Examiner wrote "sense line 20," where he meant to write "sense line 20'," and "vias 20," where he meant to write "vias 20'." Furthermore Daughton et al.'s vias (each of Daughton et al.'s plurality of magnetic memory elements having, according to Daughton et al., a "further conduction via into the substrate to the other side that transistor along the main current flow path therethrough from an adjacent interconnection 20 in contact with that cell." See paragraph 0082) do not bear part #20

Art Unit: 2826

and in fact bear no part # at all. A new ground(s) of rejection has been made view of Daughton et al., properly identifying the sense line as part #20' and properly identifying the vias as parts described in the text (but bearing no part #s).

In view of the Examiner's error this rejection is non-final.

### ***Drawings***

**3. Figure 5 is objected to for the following reason:**

A replacement drawing sheet was received on 4/13/06. This drawing sheet is not acceptable, because it is not proper drafting technique to line through a mistake with squiggly lines. This sheet illustrates the changes Applicant has in mind in a wonderfully direct manner, but it cannot be used to replace (this is the function of a Replacement Drawing Sheet) the original sheet in the formal record.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency.

Art Unit: 2826

Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The title of the invention is not descriptive. A new title, such as "USING SENSE LINES TO THERMALLY CONTROL THE STATE OF AN MRAM" is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Rejections - 35 USC § 102***

5. Claims 1-10 and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by DAUGHTON ET AL. (2004/0125673).

Daughton et al. discloses a magnetic random access memory device with a plurality of magnetic memory elements 10 comprising a spin dependent tunnel junction (note figures 15A-B and paragraph 0101) or a giant magnetoresistive device (note figures 16A-B and paragraph 0107); at least one write conductor 22 and a free layer 15 or 16, wherein switching a magnetic orientation of at least one of the plurality of magnetic

Art Unit: 2826

memory elements 10 comprises switching a magnetic orientation of the free layer 15 or 16; a sense line 20' comprising a semiconductor material comprising Si, coupled to the plurality of magnetic memory elements 10 in order to sense a magnetic orientation of at least one of the plurality of magnetic memory elements 10; wherein the sense line 20' includes first and second vias (no part #s, each of the vias, one via for each one of the plurality of magnetic memory elements 10, is described in paragraph 0082 as a "further conduction via into the substrate to the other side that transistor along the main current flow path therethrough from an adjacent interconnection 20 in contact with that cell." Note, paragraph 0079, that sense line interconnections 20 form strings so that each such string forms sense line 20'); and wherein the sense line 20' is utilized to thermally assist (note paragraph 0082) in switching a magnetic orientation of at least one of the plurality of magnetic memory elements 10; further comprising a current source (note paragraph 0095) coupled to the sense line 20' wherein utilizing the sense line 20' to thermally assist in switching a magnetic orientation of at least one of the plurality of magnetic memory elements 10 further comprises utilizing the current source to provide a current from the first to the second via wherein the current heats at least one of the plurality of magnetic memory elements 10; wherein the at least one write conductor 22 comprises only one write conductor 22, positioned orthogonal to the sense line 20' and utilized to switch (note paragraph 0095) the magnetic orientation at least one of the plurality of magnetic memory elements 10. Furthermore, with regard to claim 9

Art Unit: 2826

Daughton et al. further discloses two write conductors 22 (one associated with a first of the plurality of magnetic memory elements 10 and the second associated with a second of the plurality of magnetic memory elements 10) wherein the two write conductors 22 are utilized to switch the magnetic orientation of at least one (in fact, two) of the plurality of magnetic memory elements 10. Note figures 11A, 15A-B, 16A-B, 20, 21, 22, and paragraphs 0078-0084, 0087-0095, and 0101-0107 of Daughton et al.

### ***Conclusion***

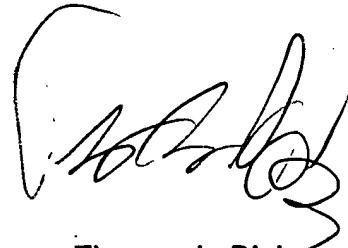
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L. Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you

Art Unit: 2826

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Thomas L. Dickey', enclosed within a large, hand-drawn oval.

**Thomas L. Dickey**  
**Patent Examiner**  
**Art Unit 2826**  
**06/06**